```
                                                      ___  ____  ____  ____  ____(R)
                                                     /__    /   ____/   /   ____/
                                                    ___/   /   /___/   /   /___/
                                                      Statistics/Data Analysis

                                                         User: PT

  ___  ____  ____  ____  ____ (R)
 /__    /   ____/   /   ____/
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Notes:
      1.  (/v# option or -set maxvar-) 5000 maximum variables

1 . use "F:\Tese\Tratamento dos dados\Dados\Portugal\BD\BD PT regressão B3.dta"

2 . log using "F:\Tese\Tratamento dos dados\Dados\Portugal\Resultados\Dados em painel\Output EF P
> l"
-------------------------------------------------------------------------------
      name:  <unnamed>
       log:  F:\Tese\Tratamento dos dados\Dados\Portugal\Resultados\Dados em painel\Output EF P
> l
  log type:  smcl
 opened on:  20 Jul 2016, 12:53:48

3 . regress BCCO DLAT ROI ROI2 TAN RISVT R_RISVT

      Source |       SS       df       MS              Number of obs =    3430
-------------+------------------------------           F(  6,  3423) =  392.20
       Model |  42.9312046     6  7.15520076            Prob > F      =  0.0000
    Residual |  62.4489414  3423  .018243921            R-squared     =  0.4074
-------------+------------------------------           Adj R-squared =  0.4064
       Total |  105.380146  3429  .030732034            Root MSE      =  .13507

------------------------------------------------------------------------------
        BCCO |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        DLAT |    .052493   .0031952    16.43   0.000     .0462283    .0587577
         ROI |   .6198814   .0394228    15.72   0.000     .5425869     .697176
        ROI2 |   .5416393   .0419595    12.91   0.000     .4593712    .6239075
         TAN |  -.2524194   .0083401   -30.27   0.000    -.2687715   -.2360673
       RISVT |  -.2515793   .0193639   -12.99   0.000    -.2895453   -.2136132
      R_RISVT |   .4786422   .1711031     2.80   0.005     .1431676    .8141168
        _cons |   .6472936   .0099074    65.33   0.000     .6278687    .6667185
------------------------------------------------------------------------------

4 .
5 . estat ovtest

Ramsey RESET test using powers of the fitted values of BCCO
       Ho:  model has no omitted variables
                F(3, 3420) =     33.28
                  Prob > F =      0.0000

6 .
```

```
 7 . estat ovtest, rhs
   (note:  ROI dropped because of collinearity)
   (note:  ROI^3 dropped because of collinearity)

   Ramsey RESET test using powers of the independent variables
          Ho:  model has no omitted variables
                  F(17, 3407) =     52.91
                     Prob > F =      0.0000

 8 .
 9 . pwcorr BCCO DLAT ROI ROI2 TAN RISVT R_RISVT, sig star(.05)

             |     BCCO     DLAT      ROI     ROI2      TAN    RISVT  R_RISVT
-------------+---------------------------------------------------------------
        BCCO |   1.0000
             |
             |
        DLAT |   0.0509*  1.0000
             |   0.0028
             |
         ROI |   0.4223*  0.0122   1.0000
             |   0.0000   0.4739
             |
        ROI2 |   0.0319  -0.1707* -0.3798*  1.0000
             |   0.0617   0.0000   0.0000
             |
         TAN |  -0.4143*  0.3519* -0.1307* -0.0940*  1.0000
             |   0.0000   0.0000   0.0000   0.0000
             |
       RISVT |  -0.2055* -0.0043  -0.1708*  0.0829* -0.0521*  1.0000
             |   0.0000   0.8026   0.0000   0.0000   0.0023
             |
     R_RISVT |   0.2739*  0.0476*  0.7979* -0.6261* -0.0453* -0.1391*  1.0000
             |   0.0000   0.0053   0.0000   0.0000   0.0080   0.0000

10 .
11 . estat vif

    Variable |       VIF       1/VIF
-------------+----------------------
     R_RISVT |      4.16    0.240580
         ROI |      3.03    0.329757
        ROI2 |      1.82    0.548494
         TAN |      1.19    0.843152
        DLAT |      1.17    0.853429
       RISVT |      1.04    0.964256
-------------+----------------------
    Mean VIF |      2.07

12 .
13 . estat hettest

   Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
            Ho: Constant variance
            Variables: fitted values of BCCO

            chi2(1)      =     1.88
            Prob > chi2  =   0.1698
```

```
14 .
15 . estat imtest, white

White's test for Ho: homoskedasticity
         against Ha: unrestricted heteroskedasticity

         chi2(24)     =    481.64
         Prob > chi2  =    0.0000

Cameron & Trivedi's decomposition of IM-test
```

Source	chi2	df	p
Heteroskedasticity	**481.64**	**24**	**0.0000**
Skewness	**53.24**	**6**	**0.0000**
Kurtosis	**20.15**	**1**	**0.0000**
Total	**555.02**	**31**	**0.0000**

```
16 .
17 . regress BCCO DLAT ROI ROI2 TAN RISVT R_RISVT, vce(cluster id)

Linear regression                               Number of obs =    3430
                                                F(  6,   685) =  159.33
                                                Prob > F      =  0.0000
                                                R-squared     =  0.4074
                                                Root MSE      =  .13507

                                   (Std. Err. adjusted for 686 clusters in id)
```

BCCO	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
DLAT	**.052493**	**.0064797**	**8.10**	**0.000**	**.0397706**	**.0652155**
ROI	**.6198814**	**.0687591**	**9.02**	**0.000**	**.4848776**	**.7548853**
ROI2	**.5416393**	**.0716304**	**7.56**	**0.000**	**.4009978**	**.6822809**
TAN	**-.2524194**	**.013991**	**-18.04**	**0.000**	**-.2798897**	**-.224949**
RISVT	**-.2515793**	**.0375875**	**-6.69**	**0.000**	**-.3253799**	**-.1777787**
R_RISVT	**.4786422**	**.3319545**	**1.44**	**0.150**	**-.1731282**	**1.130413**
_cons	**.6472936**	**.0199287**	**32.48**	**0.000**	**.6081649**	**.6864223**

```
18 .
19 . xtreg BCCO DLAT ROI ROI2 TAN RISVT R_RISVT, fe

Fixed-effects (within) regression               Number of obs      =      3430
Group variable: id                              Number of groups   =       686

R-sq:  within  = 0.2383                         Obs per group: min =         5
       between = 0.2835                                        avg =       5.0
       overall = 0.2682                                        max =         5

                                                F(6,2738)          =    142.77
corr(u_i, Xb)  = -0.0496                        Prob > F           =    0.0000
```

BCCO	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
DLAT	**-.0350422**	**.020875**	**-1.68**	**0.093**	**-.0759746**	**.0058903**
ROI	**.5238657**	**.0382552**	**13.69**	**0.000**	**.4488538**	**.5988776**
ROI2	**.3008581**	**.035169**	**8.55**	**0.000**	**.2318976**	**.3698186**
TAN	**-.1806867**	**.021675**	**-8.34**	**0.000**	**-.2231877**	**-.1381858**
RISVT	**-.1501797**	**.0189038**	**-7.94**	**0.000**	**-.1872468**	**-.1131125**
R_RISVT	**.2646536**	**.1500822**	**1.76**	**0.078**	**-.0296323**	**.5589394**
_cons	**.8561788**	**.0627032**	**13.65**	**0.000**	**.7332285**	**.9791291**
sigma_u	**.12178606**					
sigma_e	**.09827913**					
rho	**.60561297**	(fraction of variance due to u_i)				

F test that all u_i=0: F(**685**, **2738**) = **5.44** Prob > F = **0.0000**

```
20 .
21 . xttest3
```

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (686) = **1.6e+05**
Prob>chi2 = **0.0000**

```
22 .
23 . xtreg BCCO DLAT ROI ROI2 TAN RISVT R_RISVT, fe vce(cluster id)
```

Fixed-effects (within) regression Number of obs = **3430**
Group variable: **id** Number of groups = **686**

R-sq: within = **0.2383** Obs per group: min = **5**
between = **0.2835** avg = **5.0**
overall = **0.2682** max = **5**

F(**6**,**685**) = **73.89**
corr(u_i, Xb) = **-0.0496** Prob > F = **0.0000**

(Std. Err. adjusted for **686** clusters in id)

BCCO	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
DLAT	**-.0350422**	**.0208703**	**-1.68**	**0.094**	**-.0760196**	**.0059352**
ROI	**.5238657**	**.0558344**	**9.38**	**0.000**	**.4142385**	**.6334929**
ROI2	**.3008581**	**.0605657**	**4.97**	**0.000**	**.1819413**	**.4197749**
TAN	**-.1806867**	**.0264957**	**-6.82**	**0.000**	**-.2327092**	**-.1286642**
RISVT	**-.1501797**	**.0304201**	**-4.94**	**0.000**	**-.2099075**	**-.0904518**
R_RISVT	**.2646536**	**.2784202**	**0.95**	**0.342**	**-.2820058**	**.811313**
_cons	**.8561788**	**.0641568**	**13.35**	**0.000**	**.7302112**	**.9821464**
sigma_u	**.12178606**					
sigma_e	**.09827913**					
rho	**.60561297**	(fraction of variance due to u_i)				

```
24 .
25 . xtreg BCCO DLAT ROI ROI2 TAN RISVT R_RISVT, re
```

Random-effects GLS regression Number of obs = **3430**
Group variable: **id** Number of groups = **686**

R-sq: within = **0.2337** Obs per group: min = **5**
between = **0.5000** avg = **5.0**
overall = **0.4042** max = **5**

Wald chi2(**6**) = **1487.22**
corr(u_i, X) = **0** (assumed) Prob > chi2 = **0.0000**

BCCO	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
DLAT	**.0446914**	**.0050483**	**8.85**	**0.000**	**.0347969**	**.0545858**
ROI	**.5517977**	**.0360148**	**15.32**	**0.000**	**.4812099**	**.6223855**
ROI2	**.3662104**	**.0345328**	**10.60**	**0.000**	**.2985273**	**.4338935**
TAN	**-.2362152**	**.0119352**	**-19.79**	**0.000**	**-.2596078**	**-.2128226**
RISVT	**-.18306**	**.0177909**	**-10.29**	**0.000**	**-.2179296**	**-.1481904**
R_RISVT	**.2805166**	**.1454901**	**1.93**	**0.054**	**-.0046387**	**.5656719**
_cons	**.6544642**	**.0152193**	**43.00**	**0.000**	**.624635**	**.6842935**
sigma_u	**.08791365**					
sigma_e	**.09827913**					
rho	**.4445013**	(fraction of variance due to u_i)				

```
26 .
27 . xtreg BCCO DLAT ROI ROI2 TAN RISVT R_RISVT, re vce(cluster id)

Random-effects GLS regression                   Number of obs      =      3430
Group variable: id                              Number of groups   =       686

R-sq:  within  = 0.2337                         Obs per group: min =         5
       between = 0.5000                                        avg =       5.0
       overall = 0.4042                                        max =         5

                                                Wald chi2(6)       =    942.11
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000

                                  (Std. Err. adjusted for 686 clusters in id)
------------------------------------------------------------------------------
             |               Robust
        BCCO |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        DLAT |   .0446914   .0063663     7.02   0.000     .0322137     .057169
         ROI |   .5517977    .054142    10.19   0.000     .4456814     .657914
        ROI2 |   .3662104    .058765     6.23   0.000     .2510332    .4813876
         TAN |  -.2362152   .0132045   -17.89   0.000    -.2620956   -.2103349
       RISVT |    -.18306   .0300866    -6.08   0.000    -.2420287   -.1240913
     R_RISVT |   .2805166   .2815837     1.00   0.319    -.2713774    .8324106
       _cons |   .6544642    .018968    34.50   0.000     .6172877    .6916407
-------------+----------------------------------------------------------------
     sigma_u |  .08791365
     sigma_e |  .09827913
         rho |   .4445013   (fraction of variance due to u_i)
------------------------------------------------------------------------------

28 .
29 . quietly regress BCCO DLAT ROI ROI2 TAN RISVT R_RISVT, vce(cluster id)

30 .
31 . estimates store POLS_rob

32 .
33 . quietly xtreg BCCO DLAT ROI ROI2 TAN RISVT R_RISVT, fe

34 .
35 . estimates store FE

36 .
37 . quietly xtreg BCCO DLAT ROI ROI2 TAN RISVT R_RISVT, fe vce(cluster id)

38 .
39 . estimates store FE_rob

40 .
41 . quietly xtreg BCCO DLAT ROI ROI2 TAN RISVT R_RISVT, re

42 .
43 . estimates store RE

44 .
45 . quietly xtreg BCCO DLAT ROI ROI2 TAN RISVT R_RISVT, re vce(cluster id)
```

```
46 .
47 . estimates store RE_rob

48 .
49 . estimates table POLS_rob FE FE_rob RE RE_rob, b se stats(N r2 r2_o r2_b r2_w F chi2) b(%7.5f)
```

Variable	POLS_~b	FE	FE_rob	RE	RE_rob
DLAT	**0.05249**	**-0.03504**	**-0.03504**	**0.04469**	**0.04469**
	0.00648	**0.02088**	**0.02087**	**0.00505**	**0.00637**
ROI	**0.61988**	**0.52387**	**0.52387**	**0.55180**	**0.55180**
	0.06876	**0.03826**	**0.05583**	**0.03601**	**0.05414**
ROI2	**0.54164**	**0.30086**	**0.30086**	**0.36621**	**0.36621**
	0.07163	**0.03517**	**0.06057**	**0.03453**	**0.05876**
TAN	**-0.25242**	**-0.18069**	**-0.18069**	**-0.23622**	**-0.23622**
	0.01399	**0.02167**	**0.02650**	**0.01194**	**0.01320**
RISVT	**-0.25158**	**-0.15018**	**-0.15018**	**-0.18306**	**-0.18306**
	0.03759	**0.01890**	**0.03042**	**0.01779**	**0.03009**
R_RISVT	**0.47864**	**0.26465**	**0.26465**	**0.28052**	**0.28052**
	0.33195	**0.15008**	**0.27842**	**0.14549**	**0.28158**
_cons	**0.64729**	**0.85618**	**0.85618**	**0.65446**	**0.65446**
	0.01993	**0.06270**	**0.06416**	**0.01522**	**0.01897**
N	**3430**	**3430**	**3430**	**3430**	**3430**
r2	**0.40739**	**0.23831**	**0.23831**		
r2_o		**0.26818**	**0.26818**	**0.40416**	**0.40416**
r2_b		**0.28347**	**0.28347**	**0.50002**	**0.50002**
r2_w		**0.23831**	**0.23831**	**0.23370**	**0.23370**
F	**1.6e+02**	**1.4e+02**	**73.89253**		
chi2				**1.5e+03**	**9.4e+02**

legend: b/se

```
50 .
51 . xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

        BCCO[id,t] = Xb + u[id] + e[id,t]

        Estimated results:
                     |       Var     sd = sqrt(Var)
             ---------+-----------------------------
                BCCO |     .030732       .1753055
                   e |    .0096588       .0982791
                   u |    .0077288       .0879136

        Test:   Var(u) = 0
                             chibar2(01) =  1362.52
                          Prob > chibar2 =   0.0000

52 .
53 . xtoverid

Test of overidentifying restrictions: fixed vs random effects
Cross-section time-series model: xtreg re  robust cluster(id)
Sargan-Hansen statistic  81.780  Chi-sq(6)    P-value = 0.0000

54 .
```

```
55 . hausman FE RE, sigmamore
```

	Coefficients (b) FE	(B) RE	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
DLAT	**-.0350422**	**.0446914**	**-.0797335**	**.0205755**
ROI	**.5238657**	**.5517977**	**-.027932**	**.0145011**
ROI2	**.3008581**	**.3662104**	**-.0653523**	**.0090246**
TAN	**-.1806867**	**-.2362152**	**.0555285**	**.0184782**
RISVT	**-.1501797**	**-.18306**	**.0328803**	**.0071801**
R_RISVT	**.2646536**	**.2805166**	**-.015863**	**.0450876**

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(**6**) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= **105.50**
Prob>chi2 = **0.0000**

```
56 .
57 . log close
       name:  <unnamed>
        log:  F:\Tese\Tratamento dos dados\Dados\Portugal\Resultados\Dados em painel\Output EF P
> l
  log type:  smcl
 closed on:  20 Jul 2016, 12:53:56
```

```
58 .
```